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Short- and long-term effects of an offshore wind farm on three species of sandeel and their sand habitat

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Offshore wind farms are being constructed at a high rate due to a high demand, both economically and politically, for sources of renewable energy. We investigated the short- and long-term impacts of the Horns Rev I wind farm off western Denmark, established in 2003, on three ecological key species of sandeel (*Ammodytes marinus*, *Ammodytes tobianus* and *Hyperoplus lanceolatus*). As sandeels display a distinct preference for sand habitats with a low weight fraction of fine particles, we expected changes in habitat quality to provide a causal explanation for the potential impact of the wind farm on the sandeel community. A before-after-control-impact (BACI) test design was applied. The results revealed a positive short-term effect on the densities of both juvenile and adult sandeels, which was consistent with a reduction in the fraction of silt+clay in the sediment. In the long term a negative effect on juvenile sandeels was found. The negative long-term effect was, however, not consistent with the survey data from September 2009 or with the fraction of silt+clay in the sediment.